	DISPOSITION OF PUBLIC COMMENTS ON DRAFT POLICY STATEMENT ANM-03-115-28, USE OF SURROGATE PARTS WHEN EVALUATING SEATBACKS AND SEATBACK MOUNTED ACCESSORIES FOR COMPLIANCE WITH 25.562(C)(5) AND 25.785(B) AND (D)	
Commenter	**Comment**	**Disposition**
Air Transport Association	Our members have reviewed the Notice and support the adoption of this proposed policy. These comments were compiled from ATA member airlines and, as such, represent an industry perspective.	N/A
Air Line Pilots Association, International	1. We concur that using such a surrogate test article would effectively substitute for the actual article in testing for compliance with FAR 25.562(c)(5). 2. The applicant would also have to meet the requirements of FAR 25.785(b), which requires that a person making proper use of the facilities will not suffer serious injury in an emergency landing as a result of the inertia forces of §§ 25.561 and 25.562. The proposed policy contends that a one-time compliance test using one of two methods would be acceptable. The first method is to strike the device with either a bowling ball weighing 13 pounds, or a specific head form used in crash testing, or an equivalent object, impacting the subject device at 34 feet per second. However, the passing criterion is not clearly indicated. The second method is to install the subject device in a dynamic seat test using multiple rows of seats, following the procedures of § 25.562(b)(2). Our concern is that a one-time only test does not thoroughly evaluate the impact. The test should be repeated and the device should not fracture in a way that could cause serious injury in any of the tests. The impact point should be specified as the most critical location on the test article. Finally, the test for compliance with § 25.785(b), should also disallow sharp edges longer than some specific short length, like ¼ - ¾ inches. A short length for a sharp fracture edge should be inherently safer than a long edge.	The methods for impacting seat back mounted accessories to determine if injurious objects are produced during a head impact have been removed from this memo, but are included in draft policy memo ANM-03-115-31, "Policy Statement on Conducting Component Level Tests to Demonstrate Compliance with §§ 25.785(b) and (d)". Draft policy memo ANM-03-115-31 has been published for public comment, and these comments can be considered during the disposition of comments for that memo.
Boeing	We thank the FAA for drafting the subject policy, which will help in streamlining the certification of seat assemblies to §§ 25.562 and 25.785.	N/A
GAMA	Industry wishes to thank the FAA for drafting the subject policy, which may assist in streamlining certification of seat assemblies to §§ 25.562 and 25.785.	N/A
GAMA & Boeing	Remove the wording relating to demonstrating an accessory does not cause serious injury to passengers as a result of sharp edges. Reason: Industry does not agree that one of the criteria for compliance with §§ 25.785(b) and (d) is evaluating a seatback accessory for post head impact sharp edges. The types of injuries the FAA is requiring to be addressed for compliance are those that would not be considered serious, but minor. This position is based on both the International Civil Aviation Organization (ICAO) and Abbreviated Injury Scale (automotive) definitions of a "serious" injury. As the resolution of this issue may hinder the expedient finalization of this policy memorandum, any wording regarding the evaluation of sharp edges should be incorporated into the draft FAA policy memorandum ANM-03-115-31, "Policy Statement on Conducting Component Level Tests to Demonstrate Compliance with §§ 25.785(b) and (d)". The draft policy memorandum ANM-03-115-31 describes in greater detail similar testing methodology and rationale to the injurious edges	The scope of this policy memo will be limited to addressing head injury assessments due to blunt trauma only. Revision of this draft policy memo does not indicate concurrence with the comment that seat back mounted accessories should not require an evaluation of parts that become loose or sharp projections that are formed during a head impact. The methods for impacting seat back mounted accessories to determine if injurious objects are produced during a head impact have been removed from this policy memo. These methods are included in the other FAA draft policy memo referenced in the comment.

	part of this draft policy. Consolidating similar policy into one policy memorandum will reduce the risk of possible discrepancies between the two policy memorandums.	
GAMA & Boeing	Section 25.785(d) does not require that each occupant of a forward or aft facing seat be protected from head injury by the elimination of injurious objects within the striking radius of the head as stated under the "Current Regulatory and Advisory Material" section. Specific Changes: Revise the wording in the "Current Regulatory and Advisory Material" section regarding Section 25.785(d). Section 25.785(d) outlines three methods of head injury protection for occupants of a forward or aft facing seat, one of which (§ 25.785(d)(2)) is the elimination of injurious objects within the striking radius of the head. Reason: Section 25.785(d) outlines three possible methods of compliance.	Section 25.785(d) states, "Each occupant of any other seat must be protected from head injury by a safety belt and, as <u>appropriate to the type, location, and angle of facing of each seat, by one or more of the following</u> [emphasis added]: (1) A shoulder harness that will prevent the head from contacting any injurious object. (2) The elimination of any injurious object within striking radius of the head. (3) An energy absorbing rest that will support the arms, shoulders, head, and spine." This draft policy memo provides guidance for when a head strikes a seat back mounted accessory. For this case, § 25.785(d)(2) is applicable and prohibits "injurious objects" where the head would contact the accessory, i.e., "within the striking radius of the head". The wording in the draft policy memo appropriately provides this explanation, and has not been revised with the proposed wording.
GAMA & Boeing	The first two paragraphs of the "Policy" section of the draft FAA memorandum are weighed toward addressing dynamic testing.	Blunt trauma tests (e.g., bowling ball test, HIC test) are dynamic tests regardless of whether or not the applicable airplane includes § 25.562 in its certification basis. However, the memo has been revised so that persons do not misunderstand that "dynamic tests" refers solely to § 25.562 dynamic tests.
GAMA & Boeing	Specific Changes: Revise the wording in the "Policy" section to the following. Add reference to AC 25-17 to guide the reader to additional information regarding compliance to Section 25.785(d). Suggested Wording: "In many row-to-row seat configurations, seatback mounted accessories are installed within the head paths of forward facing seated occupants. In order to demonstrate compliance with the aforementioned requirements, the injury potential of these seatbacks and accessories must be assessed. The types of tests that are conducted are dependant on the certification basis of the airplane. Sections 25.785(b) requires that a seat be designed so that an occupant would not suffer "serious injury" in an emergency landing. Sections 25.785(d) outlines three methods of head protection for occupants seated in forward or aft facing seats. A commonly used method of compliance is to eliminate injurious objects within the striking radius of the head (Section 25.785(d)(2)). As a result, seatbacks/accessories on these airplanes are evaluated to ensure that an occupant would not suffer serious head injury from blunt trauma. See AC 25-17, Section 25.785 for more information on this subject. Airplane certification bases which include § 25.562(c)(5) require that protection be	As stated above, blunt trauma tests (e.g., bowling ball test, HIC test) are dynamic tests regardless of whether or not the applicable airplane includes § 25.562 in its certification basis. However, the memo has been revised so that persons do not misunderstand that "dynamic tests" refers solely to § 25.562 dynamic tests. The FAA issued a policy memo, dated July 18, 1994, which explains that the guidance in AC 25-17 for blunt trauma assessments is not adequate or acceptable based on CAMI research. The July 1994 memo provided some interim guidance and indicated our intent to develop more comprehensive policy on this subject. Draft policy memo ANM-03-115-31, which is currently out for public comment, contains this new guidance and is proposed to supercede the interim guidance in the July 1994 memo. Note that the previously issued guidance is related, but

	provided so that a head impact does not result in a HIC greater than 1,000 units under the dynamic test conditions specified in § 25.562(b). Typically, this is acceptable to demonstrate compliance with the head blunt trauma aspects of §§ 25.785(b) and (d)…" Reason: The current wording should be changed to de-emphasize the dynamic testing aspects of the policy letter to make it equally applicable to Sections 25.562 and 25.785. The language referring to Section 25.785(b) and (d) have been revised to reflect Issue #2.	referencing it in this policy memo is not considered needed to support its intent of providing guidance on the use of surrogate parts. Because of these reasons, the policy memo has not been revised to reference AC 25-17 as acceptable guidance.
GAMA & Boeing	Delete the following wording in the "Policy" section: Reason: The surrogate part specified in this policy memo should be as rigid if not more so than what would be mounted on a seat back. In the highly unusual case where an accessory is more rigid than a surrogate part, the overall effect on the severity of the head strike will be negligible. The subject wording would require a comparison of the surrogate part and accessory in terms of deflection and energy absorption under impact loading, which adds a high level of complexity to this policy that is unwarranted.	As indicated in the comment, it would be unusual for an accessory to be more rigid than the surrogate part define in the policy memo. However, significant to the justification for allowing the use of a surrogate part is that it would be more rigid than the actual part. By being more rigid, it would not dissipate as much energy from the head impact as the actual part, and this is significant to producing a critical case test. The statement will remain in the policy memo so that applicants understand the limits of FAA acceptance for the use of surrogate parts. The FAA does not consider that this statement produces a high level of complexity in the policy memo. Typical seat back mounted accessories are less rigid by inspection.
GAMA & Boeing	Revise the wording in the "Policy" section to the following. "The surrogate part should be fabricated from 6061-T4 aluminum and have a minimum thickness of 0.238 inches at the outer face." "A surrogate part made of a material and thickness other than 6061-T4 aluminum in a minimum thickness of 0.238 inch may be used if an FAA Aircraft Certification …" **Reason:** If the surrogate target is made of aluminum sheet or plate, there is a manufacturing thickness tolerance. Per ANSI H35.2-2003, sheet and plate thickness tolerances in the 0.25 inch range is 0.012 inches. The surrogate part may be fabricated with a cavity to allow for ballasting. The entire surrogate part may be thicker than 0.238 inches, however the surface being struck by the head form may not. Specifying the outer face of the surrogate part will eliminate this scenario.	The memo has been revised to include the 0.238 inch dimension based on manufacturing tolerances. The minimum thickness of the surrogate part should be 0.238 inch at all locations on the surrogate part.
GAMA & Boeing	Revise the wording in the "Policy" section to the following. "The exposed surface of the surrogate part that will be impacted should be flat. That is, it is not required to have the contour of the accessory's exposed surface represented by the surrogate part. Note that this is based on typical accessory installations which are essentially mounted flush with the seatback and have a generally homogeneous contact area. Where the accessory's exposed surface has features that could significantly affect the impact of the headform on the seatback (such as large structural protrusions), those features must be represented by the surrogate part.	The current wording is applicable to more parts (or is considered "more generic") than only those made of plastic. The current wording uses plastic parts as an example to demonstrate a design where an actual accessory's feature would not need to be represented by the surrogate part. The current wording then states that "designs that differ from this…**might**" need to be represented "in order to adequately assess head injury potential." Hence, the policy allows for the contours of

	Reason: Suggested changes are to make the policy more generic than the contour of plastic parts, and to provide what the basis is for determining whether a surface variation should be taken into consideration.	parts made of other than plastic to not be represented. The current wording also provides "the basis for determining whether a surface variation should be taken into consideration." It indicates that the exposed surface should be represented if this is needed to adequately access head injury potential. This criterion will require an engineering assessment to determine if an the exposed surface should be represented, but is similar, in this respect, to the proposed wording which would require a determination of "**significant** affect" and "**large** structural protrusions". Additionally, the proposed wording is not considered the most appropriate because the use of the term "large structural parts" suggests that unless a structural protrusion is determined to be "large", it would not need to be represented by the surrogate part. The current wording is considered appropriate and sufficient.
GAMA & Boeing	Revise the wording in the "Policy" section to the following • The weight of the surrogate part, and additional ballast if needed, should be the same weight ±10 percent of the actual part. • The surrogate part should be located on the seatback in the same place where the actual part would be ±0.75 inches, located in terms of the x and y coordinates in the attached figure. The surrogate part should be located such that the surface, which will be contacted during the test, is at the same location where the actual part would be ±0.25 inches, located in terms of the z coordinate (see the attached figure). Reason: For weight, allowing additional flexibility is beneficial. Having the surrogate part weight slightly below the actual part is minor compared to the conservatism of this method. For location, "same" needs additional elaboration. Tolerances suggested are to reduce the precision necessary in this method of compliance while accurately determining head strike severity.	It is acceptable for the surrogate part to be ± 10 of the weight of the actual part. The memo has been revised to reflect this. It is also acceptable to specify tolerances for the surrogate part location. The FAA considers that it is acceptable to vary the location within the manufacturing tolerances for mounting the actual accessory.
GAMA & Boeing	Add the following words to the end of paragraph four of the "Policy" section. "The use of an acceptable surrogate target will usually be more conservative than the actual production part in terms of head impact blunt trauma, as the surrogate part will not dissipate impact energy as production parts usually do through fracture or deformation." Reason: Additional wording to emphasize the conservative nature of using surrogate targets.	The policy allows a surrogate part to be used for an accessory which is as rigid as the surrogate part. The policy is not conservative for this case. The HIC/blunt trauma value which results from a test using a surrogate part per this policy may not be that conservative since the seat back itself typically represents the greatest mass and inertial force to overcome in the test, not the accessory. The policy memo states that the use of surrogate parts is acceptable; the degree of conservatism when using a typical accessory, which is not known (i.e., there is no

		data on this issue), is not pertinent to clarification of the policy or acceptance of tests using surrogate parts.
GAMA & Boeing	Add the following words to the "Summary" section. The purpose of this memorandum is to streamline the seat certification process by providing Federal Aviation Administration (FAA) certification policy on using surrogate test articles in lieu of actual production seatback mounted accessories (e.g., video monitor, telephone) during blunt trauma tests in accordance with §§ 25.562(c)(5) and 25.785(b) and (d), and to demonstrate retention of mass items to § 25.562(b) loads. Modify the "Policy" section. "The surrogate part should be attached to the seat by the final production hardware or a conservative representation of the final production hardware. For substantiating blunt trauma requirements, a conservative representation of the attachment hardware would be at least as rigid as the actual hardware. The surrogate part should be mounted so that it would not move farther or faster, with respect to the seatback, than the actual part during the test. Note that when using a surrogate target with production attachment hardware retention of the accessory to § 25.562 loads can also be demonstrated, while a conservative representation of the attachment hardware may need additional justification for retention. Reason: The surrogate part can also be used to demonstrate retention of mass.	The memo has been revised to clarify that attachment hardware, when adequately represented, may be substantiated to the § 25.562 load conditions for its ability to retain an accessory.
GAMA & Boeing	Defining what a "production accessory" is. Specific Changes: Add the following words to the "Summary" section. "For this policy memo, the terms "actual production accessory" or "production accessory" refer to accessories that are the same part number as what will be installed in the certified seat assembly, or non-production parts, non-functioning parts, or other production accessories that have typically been used to demonstrate compliance to §§ 25.562(c)(5) and 25.785(b) and (d) due to their similarity to the installed seatback accessory." Reason: The exact part number installed on the seat is commonly not used for testing, but an accessory that is similar. Defining what a "production accessory" is will hopefully clarify that this policy also applies to similar accessories as well.	The memo has been revised to explain the types of parts which are currently used for blunt trauma testing. The proposed wording is not considered appropriate. It refers to "non-production parts" as "production accessories".